



# Carmel Clay Comprehensive Plan

## PART 4

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## TRANSPORTATION PLAN INTRODUCTION

*Part 4: Transportation Plan* is inclusive of vehicular, bicycle, pedestrian, and mass transportation. The City of Carmel recognizes that improving and establishing multiple modes of transportation is essential to further its evolution to a high quality edge city.

The *C3 Plan* is the first of its kind to be inclusive of all mainstream transportation modes. The City is making the conscious decision to emphasize multiple modes of transportation to complement traditional vehicular transportation. Multi-modal transportation is increasingly desirable because residents want bicycle and pedestrian connectivity (e.g. Multi-use Paths) to local amenities, commuters want alternatives (e.g. light rail) for travel to work, and life-style changes are demanding more recreational facilities (e.g. Monon Greenway).

To address each mode of transportation, this Part is divided into the following three sections:

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### Thoroughfare Plan

The Thoroughfare Plan identifies and describes the recognized street classifications. It also includes the 20-Year Thoroughfare Plan Map which applies those street classifications to every street in Carmel's planning jurisdiction. The application of street classifications is designed to result in the effective connectivity and efficient flow of traffic.

### Bicycle and Pedestrian Facility Plan

The Bicycle and Pedestrian Facility Plan identifies and describes the facilities designed for bicycle and pedestrian use. It also includes the Bicycle and Pedestrian Facility Plan Map which denotes where each type of facility is intended to be installed or maintained to achieve effective connectivity.

### Transit Plan

The Transit Plan identifies and describes the transit system and facilities desired by the City of Carmel. The transit system is currently in the planning stages, so the content of this Plan is meant to support the ongoing desire to establish a commuter line to downtown Indianapolis and intra-city transportation.

## THOROUGHFARE PLAN

The City's 20-Year Thoroughfare Plan focuses on multi-modal transportation systems. The Thoroughfare Plan first identifies and describes recognized street classifications. It then applies those street classifications to every street in the City's planning jurisdiction on the Thoroughfare Plan Map.

### Street Classifications and Descriptions

The following street classifications are used on the Thoroughfare Plan Map:

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| 3. Urban Arterial Street .....    | pg 52 |
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| 8. Parkway Collector Street ..... | pg 57 |
| 9. Local Street.....              | pg 58 |

Each of the street classifications listed above has a page dedicated to describing how it can be used to convey vehicular traffic and how it fits into the fabric of the City. Further, the following headings are used, as described below, to convey the essence of each street classification:

**General Description:** This section gives a brief description of why the street classification has been established.

**Street Features:** This section conveys the primary design standards that make each street classification unique. The standards include: minimum right-of-way, maximum number of lanes, minimum lane widths, medians, curbs, pedestrian facilities, minimum pedestrian facility width, bicycle lanes, minimum bicycle lane width, on-street parking, minimum tree lawn, and street trees.

**Typical Cross Section:** This section references a typical cross section illustration of the street classification. The illustration is intended to portray the purest applied version of the street. When applied in the real world, variations in the design may be necessary.

**Design Priorities:** During the design phase of all street improvement projects, decisions have to be made to best meet budgetary constraints, timelines, funding cycles, physical constraints, and political constraints. This section communicates the primary and secondary priorities for each street classification. Primary priorities are those that should not be foregone in design decisions. Secondary priorities are those that may be considered for compromise, non-inclusion, or later phases of the project.

**Traffic Management Options:** This section describes vehicular traffic management options to consider when improving a street. The options listed are intended to identify the most appropriate means to intersect streets, slow traffic (if appropriate), increase traffic efficiency (when appropriate), and improve safety.

**Effect of Annexation Agreement:** Spring Mill Road, Ditch Road, Shelborne Road and Town Road between 116th and 96th Streets, and 106th Street between Commerce Drive and Spring Mill Road, shall be designated as Collector Streets. No other information in the *C3 Plan* shall be construed as superseding this section.

### Conservation Corridors Priorities:

Along context-sensitive transportation corridors, the City has designated Conservation Corridors and imposes the following priorities to protect private property, privacy, environmental features, and unique aesthetic qualities of the corridor. When planning for or designing City-funded Transportation Changes to Conservation Corridors the priorities are as follows:

- Priority 1: Under all circumstances corridor improvements will be designed to the minimum required for vehicular, bicycle and pedestrian safety.
- Priority 2: Under all circumstances, the installation and maintenance of public utilities and storm water facilities shall be accommodated.
- Priority 3: Corridor improvements will be designed to minimize negative impacts on private residential properties relative to property value, privacy, and encroachment.
- Priority 4: Design streets, bicycle and pedestrian facilities with the lowest impact that is necessary to meet the current and future demands.
- Priority 5: Design streets, bicycle and pedestrian facilities to avoid removal of mature or significant trees and vegetation.
- Priority 6: Add or replace trees and vegetation after facility improvements are made to buffer private residential properties and/or to replace trees and vegetation that were removed for construction.
- Priority 7: Achieve priorities 3 through 5 above by installing a pedestrian facility on only one side of the street, where appropriate.
- Priority 8: Achieve priorities 3 through 5 above by narrowing the typical tree lawns, where appropriate.
- Priority 9: Include adjacent and nearby private residential property owners in early design discussions.

## PRIMARY ARTERIAL STREET

### General Description

A Primary Arterial Street is designed to carry very heavy volumes of traffic to major destinations in or out of the City. A Primary Arterial Street is equivalent in vehicular intensity to a Primary Parkway Street. Generally, Primary Arterial Streets have restricted access, turn lanes at all intersections, and are designed to mitigate congestion.

### Street Features

- **Minimum Right-of-Way:** 120 feet
- **Maximum Number of Lanes:** 4 lanes, plus shared turning lane
- **Minimum Lane Width:** 11.5 feet
- **Medians:** Not required
- **Curbs:** Required straight curbs
- **Pedestrian Facility:** Required as per the Bicycle and Pedestrian Facility Plan; typically a multi-use path on both sides of the street
- **Minimum Pedestrian Facility Width:** 10 feet
- **Bicycle Lane:** Required as per the Bicycle and Pedestrian Facility Plan; typically on both sides of the street
- **Minimum Bicycle Lane Width:** 5 feet when required
- **On-Street Parking:** Not permitted
- **Minimum Tree Lawn:** 8 feet
- **Street Trees:** Required

### Typical Cross Section

- See illustration below

### Primary Priorities Within Right-of-Way

- Protect Conservation Corridors (see page 49)
- Width of travel lanes
- Vehicular efficiency
- Vehicular speed
- Properly installed and designed bicycle and pedestrian facilities

### Secondary Priorities Within Right-of-Way

- Sensitive to context
- Street trees
- Tree lawn widths

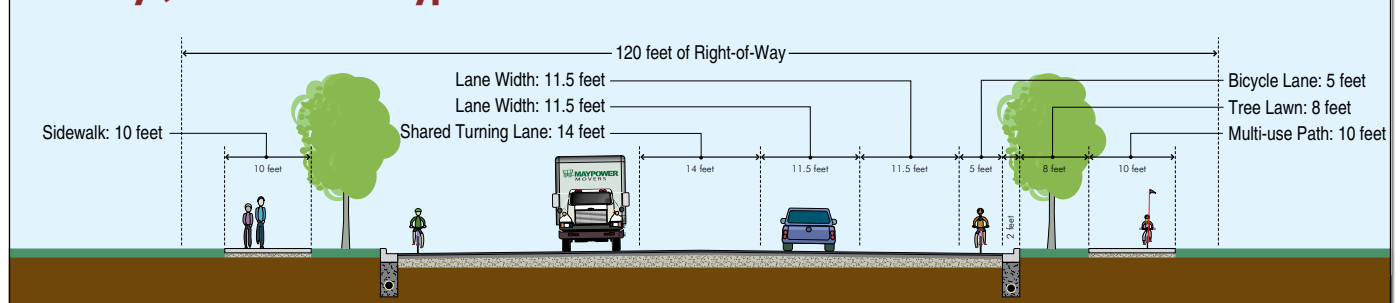
### Traffic Management Options

- Roundabouts
- Defined turn lanes at intersections or roundabouts
- Acceleration and deceleration lanes
- Grade separation at highways
- Exit ramps at highways and interstates
- Bicycle Lanes
- Traffic management signs
- Limited access
- Medians



96th Street east of Keystone Parkway.

## Primary Arterial Street Typical Cross Section



## PRIMARY PARKWAY STREET

### General Description

A Primary Parkway Street is designed to carry very heavy volumes of traffic to major destinations in or out of the City. A Primary Parkway is equivalent in vehicular intensity to a Primary Arterial. Generally, Primary Parkway Streets have a large median, rigid access limitations, and aesthetic enhancements.

### Street Features

- **Minimum Right-of-Way:** 170 feet
- **Maximum Number of Lanes:** 4 to 6 lanes
- **Minimum Lane Width:** 12 feet
- **Medians:** Required; minimum 15 feet
- **Curbs:** Required straight curbs
- **Pedestrian Facility:** Required as per the Bicycle and Pedestrian Facility Plan
- **Minimum Pedestrian Facility Width:** N/A
- **Bicycle Lane:** Required as per the Bicycle and Pedestrian Facility Plan
- **Minimum Bicycle Lane Width:** N/A
- **On-Street Parking:** Not permitted
- **Minimum Tree Lawn:** N/A
- **Street Trees:** Preserve and enhance tree canopy adjacent to the corridor

### Typical Cross Section

See illustration below

### Primary Priorities Within Right-of-Way

- Sensitive to context
- Width of travel lanes
- Median width
- Vehicular efficiency
- Vehicular speed
- Buffer planting
- Bicycle and pedestrian facilities on cross streets

### Secondary Priorities Within Right-of-Way

- Properly installed and designed bicycle and pedestrian facilities

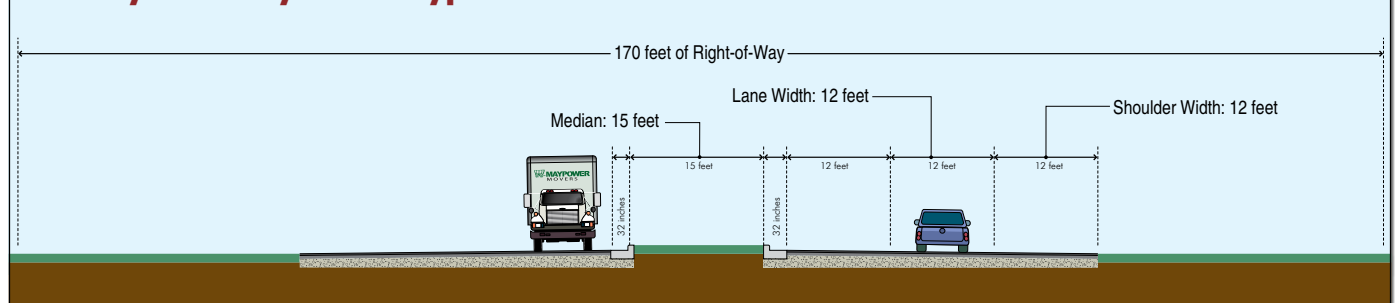
### Traffic Management Options

- Limited access
- Grade separation at cross streets
- Exit ramps at major intersections
- Traffic management signs



Keystone Parkway north of 106th Street.

## Primary Parkway Street Typical Cross Section



## URBAN ARTERIAL STREET

### General Description

An Urban Arterial Street is designed to carry heavy volumes of traffic to major destinations in the City. An Urban Arterial Street is equivalent in vehicular intensity to an Arterial Street and Parkway Arterial Street. Generally, Urban Arterial Streets are configured to fit within urban areas and pre-developed corridors. An Urban Arterial Street is designed to allow limited driveway access and allow on-street parking when deemed safe in urban areas.

### Street Features

- **Minimum Right-of-Way:** 98 feet, plus 8 feet per parking lane
- **Maximum Number of Lanes:** 4 lanes
- **Minimum Lane Width:** 11.5 feet
- **Median:** Not required
- **Curbs:** Required straight curbs
- **Pedestrian Facility:** Required as per the Bicycle and Pedestrian Facility Plan; typically a sidewalk on both sides of the street
- **Minimum Pedestrian Facility Width:** 12 feet
- **Bicycle Lane:** Required as per the Bicycle and Pedestrian Facility Plan; typically on both sides of the street
- **Minimum Bicycle Lane Width:** 5 feet when required
- **On-Street Parking:** Optional on one or two sides; minimum 8 feet per parking lane
- **Minimum Tree Lawn:** N/A, but a series of tree beds, a minimum of 6 feet square or round is typical
- **Street Trees:** Required

### Typical Cross Section

- See illustration below

### Primary Priorities Within Right-of-Way

- Protect Conservation Corridors (see page 49)
- Width of travel lanes
- Sensitive to context
- Properly installed and designed bicycle and pedestrian facilities
- On-street parking

### Secondary Priorities Within Right-of-Way

- Street trees in planting beds
- Street lights
- Outdoor seating

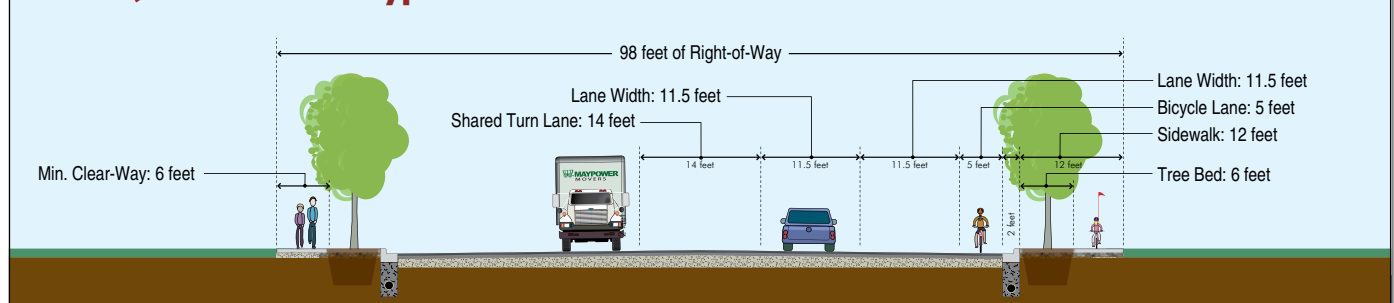
### Traffic Management Options

- Roundabouts
- Defined turn lanes at intersections or roundabouts
- On-street parking
- Narrower lane widths
- Curb extensions at traditional intersections (bump-outs)
- Bicycle lanes
- Traffic management signs



*South Range Line Road a significant commercial corridor providing the main point of entry into the Old Town Arts and Design District from the south.*

### Urban Arterial Street Typical Cross Section





## ARTERIAL STREET

## General Description

An Arterial Street is designed to carry heavy volumes of traffic to major destinations in the City. An Arterial Street is equivalent in vehicular intensity to an Urban Arterial Street and Parkway Arterial Street. Generally, Arterial Streets are configured to fit within suburban areas and do not permit on-street parking.

## Street Features

- **Minimum Right-of-Way:** 100 feet
- **Maximum Number of Lanes:** 4 lanes
- **Minimum Lane Width:** 11.5 feet
- **Median:** Not required
- **Curbs:** Required straight curbs
- **Pedestrian Facility:** Required as per the Bicycle and Pedestrian Facility Plan; typically a multi-use path on both sides of the street
- **Minimum Pedestrian Facility Width:** 10 feet
- **Bicycle Lane:** Required as per the Bicycle and Pedestrian Facility Plan; typically on both sides of the street
- **Minimum Bicycle Lane Width:** 5 feet when required
- **On-Street Parking:** Not permitted
- **Minimum Tree Lawn:** 8 feet
- **Street Trees:** Required

## Typical Cross Section

- See illustration below

## Primary Priorities Within Right-of-Way

- Protect Conservation Corridors (see page 49)
- Width of travel lanes
- Properly installed and designed bicycle and pedestrian facilities

## Secondary Priorities Within Right-of-Way

- Sensitive to context
- Street trees
- Tree lawn widths

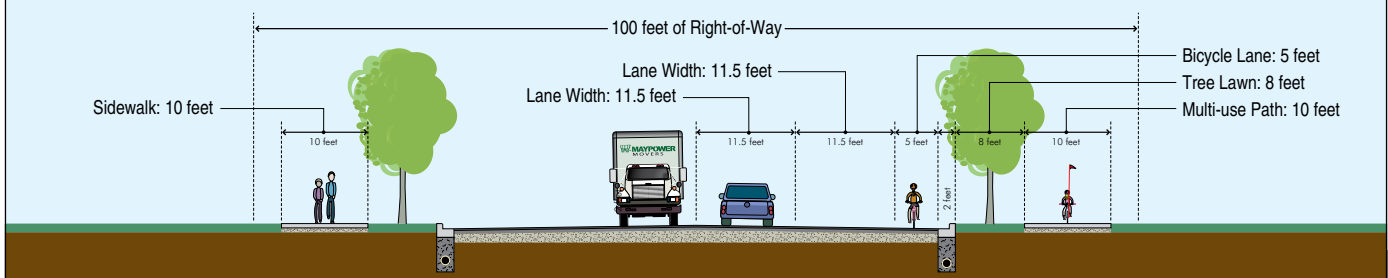
## Traffic Management Options

- Roundabouts
- Defined turn lanes at intersections or roundabouts
- Acceleration and deceleration lanes
- Grade separation at highways
- Exit ramps at highways and interstates
- Bicycle lanes
- Traffic management signs



*East 116th Street east of Keystone Parkway provides off-street facilities for pedestrians and on-street facilities for cyclists and motorists.*

## Arterial Street Typical Cross Section



## PARKWAY ARTERIAL STREET

### General Description

A Parkway Arterial Street is designed to carry heavy volumes of traffic to major destinations in the City. A Parkway Arterial Street is equivalent in vehicular intensity to an Urban Arterial Street and an Arterial Street. Generally, Parkway Arterial Streets are configured with a median and other aesthetic characteristics.

### Street Features

- **Minimum Right-of-Way:** 120 feet
- **Maximum Number of Lanes:** 4 lanes
- **Minimum Lane Width:** 11 feet
- **Median:** Required; minimum 14 feet
- **Curbs:** Required straight curbs
- **Pedestrian Facility:** Required as per the Bicycle and Pedestrian Facility Plan; typically a multi-use path on both sides of the street
- **Minimum Pedestrian Facility Width:** 10 feet
- **Bicycle Lane:** Required as per the Bicycle and Pedestrian Facility Plan; typically on both sides of the street
- **Minimum Bicycle Lane Width:** 5 feet when required
- **On-Street Parking:** Not permitted
- **Minimum Tree Lawn:** 8 feet
- **Street Trees:** Required

### Typical Cross Section

- See illustration below

### Primary Priorities Within Right-of-Way

- Protect Conservation Corridors (see page 49)
- Sensitive to context
- Width of travel lanes
- Properly installed and designed bicycle and pedestrian facilities
- Median planting
- Street trees

### Secondary Priorities Within Right-of-Way

- Tree lawn widths

### Traffic Management Options

- Roundabouts
- Defined turn lanes at intersections or roundabouts
- Acceleration and deceleration lanes
- Limited median interruption
- Traffic management signs

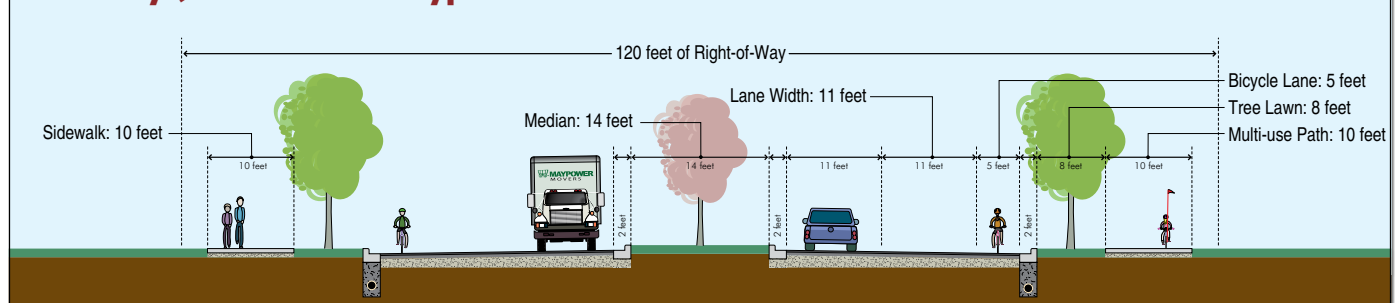


*Pennsylvania Street provides access to Regional Employment areas on the east side of U.S. 31.*



*This segments of Illinois Street has begun to establish the character of a Parkway Arterial.*

## Parkway Arterial Street Typical Cross Section





## URBAN COLLECTOR STREET

### General Description

An Urban Collector Street is designed to carry moderate volumes of traffic throughout the community. An Urban Collector is equivalent in vehicular intensity to a Collector Street and a Parkway Collector Street. Generally, Urban Collector Streets are designed to allow direct residential driveway access and allow on-street parking when deemed safe.

### Street Features

- **Minimum Right-of-Way:** 76 feet
- **Maximum Number of Lanes:** 2 lanes
- **Minimum Lane Width:** 11 feet
- **Median:** Not required
- **Curbs:** Required straight curbs
- **Pedestrian Facility:** Required as per the Bicycle and Pedestrian Facility Plan; typically a sidewalk on both sides of the street
- **Minimum Pedestrian Facility Width:** 12 feet
- **Bicycle Lane:** Required as per the Bicycle and Pedestrian Facility Plan; typically on both sides of the street
- **Minimum Bicycle Lane Width:** 5 feet when required
- **On-Street Parking:** Optional on one or two sides; minimum 8 feet per parking lane
- **Minimum Tree Lawn:** N/A, but a series of tree beds a minimum of 6 feet square or round is typical
- **Street Trees:** Required
- **Green Infrastructure:** Green infrastructure may be permitted when it clearly satisfies the City's storm water control and landscaping requirements; and after it is reviewed and approved by the City

### Typical Cross Section

- See illustration below

### Primary Priorities Within Right-of-Way

- Protect Conservation Corridors (see page 49)
- Properly installed and designed bicycle and pedestrian facilities
- Width of travel lanes
- Sensitive to context
- On-street parking

### Secondary Priorities Within Right-of-Way

- Street trees

### Traffic Management Options

- Roundabouts
- On-street parking
- Narrower lane widths
- Curb extensions at traditional intersections (bump-outs)
- Bicycle lanes
- Traffic management signs

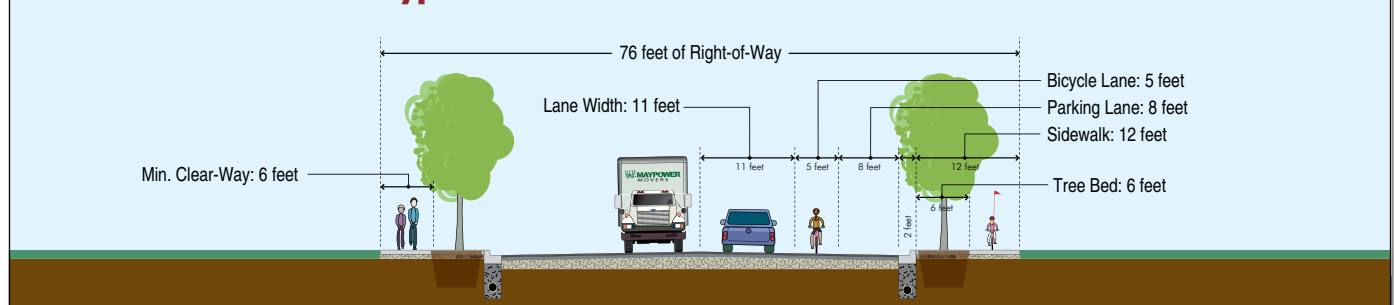


*West Main Street, in Carmel's original business district, offers on-street parking and wide sidewalks.*



*Redevelopment in Old Town has increased the use of on-street parking. Street trees are added to the streetscape to enhance pedestrian comfort.*

## Urban Collector Street Typical Cross Section



## COLLECTOR STREET

### General Description

A Collector Street is designed to carry moderate volumes of traffic throughout the community. A Collector is equivalent in vehicular intensity to an Urban Collector Street and a Parkway Collector Street. Generally, a Collector Street is designed to allow direct residential driveway access and allow on-street parking when deemed necessary and safe.

### Street Features

- **Minimum Right-of-Way:** 90 feet; 80 feet in areas south of 116th Street and west of Spring Mill Road
- **Maximum Number of Lanes:** 2 lanes
- **Minimum Lane Width:** 11 feet
- **Median:** Not required
- **Curbs:** Required straight or rolled curbs
- **Pedestrian Facility:** Required as per the Bicycle and Pedestrian Facility Plan typically sidewalks and multi-use paths depending on context
- **Minimum Pedestrian Facility Width:** 10 feet
- **Bicycle Lane:** Required as per the Bicycle and Pedestrian Facility Plan; typically on both sides of the street
- **Minimum Bicycle Lane Width:** 5 feet when required
- **On-Street Parking:** Optional on one or two sides; minimum 7 feet per parking lane
- **Minimum Tree Lawn:** 6 feet
- **Street Trees:** Required
- **Green Infrastructure:** Green infrastructure may be permitted when it clearly satisfies the City's storm water control and landscaping requirements; and after it is reviewed and approved by the City

### Typical Cross Section

- See illustration below

### Primary Priorities Within Right-of-Way

- Protect Conservation Corridors (see page 49)
- Properly installed and designed bicycle and pedestrian facilities
- Neighborhood character
- Street trees

### Secondary Priorities Within Right-of-Way

- Width of travel lanes
- On-street parking

### Traffic Management Options

- Roundabouts
- On-street parking
- Narrower lane widths
- Curb extensions at traditional intersections (bump-outs)
- Bicycle lanes
- Traffic management signs

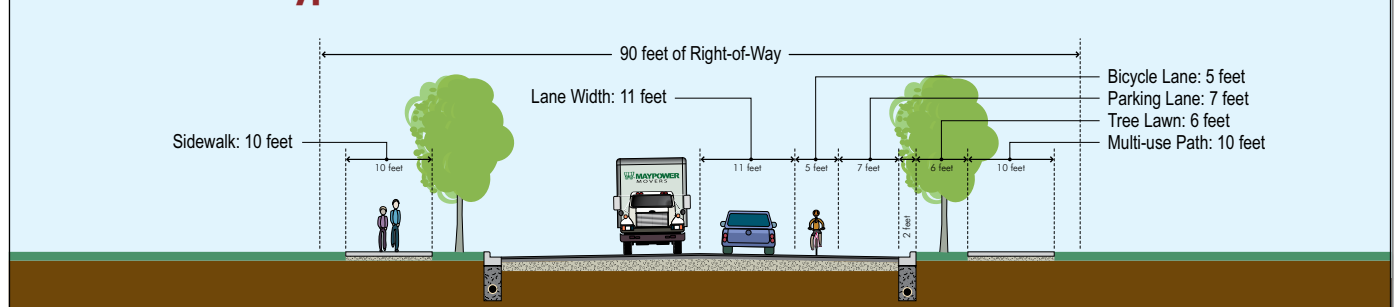


North Range Line Road is a unique Collector Street serving residential-scale businesses.



Segments of Spring Mill Road currently serve as a Collector Street, but does not reflect the desired cross section; inclusion of Multi-use Paths.

### Collector Street Typical Cross Section



## PARKWAY COLLECTOR STREET

## General Description

A Parkway Collector Street is designed to carry moderate volumes of traffic throughout the community. A Parkway Collector Street is equivalent in vehicular intensity to an Urban Collector Street and a Collector Street. Generally, a Parkway Collector Street is designed to maintain residential character and to efficiently convey residential traffic to more major roads. Driveway access should be reduced when possible and on-street parking is not permitted.

## Street Features

- **Minimum Right-of-Way:** 90 feet
- **Maximum Number of Lanes:** 2 lanes
- **Minimum Lane Width:** 16 feet
- **Median:** Required; minimum 12 feet
- **Curbs:** Required straight or rolled curbs
- **Pedestrian Facility:** Required as per the Bicycle and Pedestrian Facility Plan; typically a multi-use path on both sides of the street
- **Minimum Pedestrian Facility Width:** 10 feet
- **Bicycle Lane:** Required as per the Bicycle and Pedestrian Facility Plan; typically on both sides of the street
- **Minimum Bicycle Lane Width:** 5 feet when required
- **On-Street Parking:** Not permitted
- **Minimum Tree Lawn:** 6 feet
- **Street Trees:** Required
- **Green Infrastructure:** Green infrastructure may be permitted when it clearly satisfies the City's storm water control and landscaping requirements; and after it is reviewed and approved by the City

## Typical Cross Section

- See illustration below

## Primary Priorities Within Right-of-Way

- Protect Conservation Corridors (see page 49)
- Neighborhood character
- Sensitive to context
- Properly installed and designed bicycle and pedestrian facilities
- Width of tree lawn
- Median planting
- Street trees

## Secondary Priorities Within Right-of-Way

- Width of travel lanes

## Traffic Management Options

- Roundabouts
- Narrower lane widths
- Curb extensions at traditional intersections (bump-outs)
- Bicycle lanes
- Traffic management signs

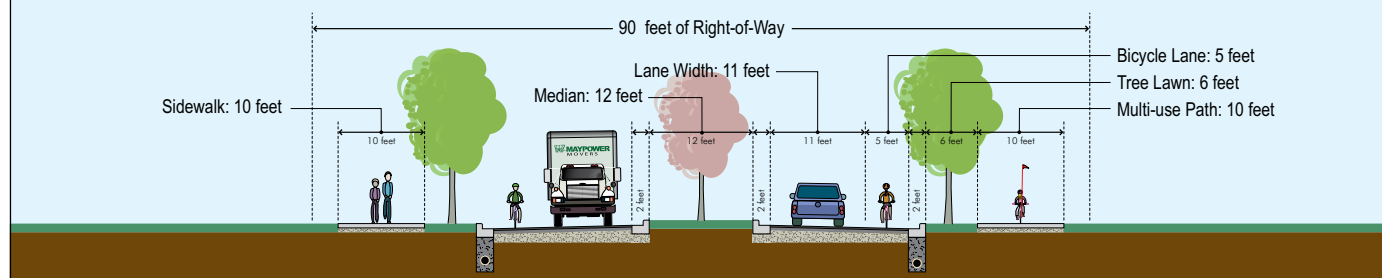


*Recent improvements to Oak Ridge Road typify Parkway Collector Street design.*



*Millbrook Parkway provides the residents of Brooks Bend an attractive and safe connection to 99th Street.*

### Parkway Collector Street Typical Cross Section





## LOCAL STREET

### General Description

A Local Street is designed to carry low volumes of traffic throughout neighborhoods and internally within non-residential developments. Generally, a Local Street is designed to provide access to platted residential lots and remote properties. Connectivity of Local Streets is encouraged between existing and future neighborhoods.

### Street Features

- **Minimum Right-of-Way:** 56 feet; 42 feet when single-loaded or where on-street parking is prohibited, as determined appropriate by the City
- **Maximum Number of Lanes:** 2 lanes
- **Minimum Lane Widths:** 10.5 feet; 13 feet when accommodating on-street parking in detached residential neighborhoods; 9 feet where on-street parking is prohibited in detached residential neighborhoods
- **Median:** Not required
- **Curbs:** Required straight or rolled curbs
- **Pedestrian Facility:** Required as per the Bicycle and Pedestrian Facility Plan; generally a sidewalk on both sides of the street
- **Minimum Pedestrian Facility Width:** 5 feet
- **Bicycle Lane:** Required as per the Bicycle and Pedestrian Facility Plan; typically on both sides of the street
- **Minimum Bicycle Lane Width:** 5 feet when required
- **On-Street Parking:** Optional on one or two sides; minimum 7 feet per parking lane;
- **Minimum Tree Lawn:** 6 feet in new construction
- **Street Trees:** Required
- **Green Infrastructure:** Green infrastructure may be permitted when it clearly satisfies the City's storm water control and landscaping requirements; and after it is reviewed and approved by the City

### Typical Cross Section

- See illustration below

### Primary Priorities Within Right-of-Way

- Protect Conservation Corridors (see page 49)
- Access to residential properties
- Reinforce neighborhood character
- Connect bicycle and pedestrian facilities from cul-de-sacs
- Properly installed and designed pedestrian facilities
- Unobstructed pedestrian facilities

### Secondary Priorities Within Right-of-Way

- Width of travel lanes
- On-street parking

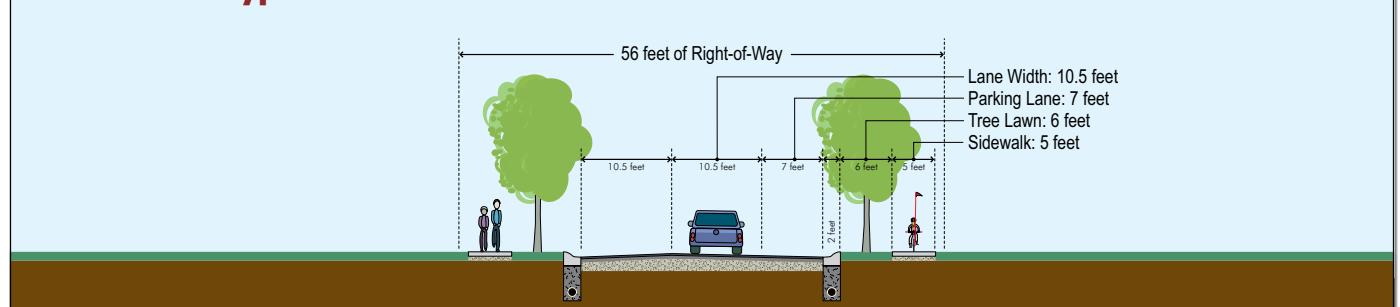
### Traffic Management Options

- Roundabouts
- On-street parking
- Narrower lane widths
- Traffic management signs



*Lakeshore East is an existing Local Street with curbs, gutters, and sidewalks on both sides of the street.*

### Local Street Typical Cross Section



## STREET CLASSIFICATION COMPARISON

The below table provides a quick reference for comparing the different street classifications. The information in the below table mirrors the content in each of the street classification descriptions on the previous pages.

## THOROUGHFARE PLAN MAP DESCRIPTION

The Thoroughfare Plan Map (on the next page) applies a street classification to each street in Carmel's planning jurisdiction. The applied street classification represents what the street will evolve to be over the course of 20 years, not as it currently exists.

The Thoroughfare Plan Map also denotes where new streets are necessary to fulfill the *C3 Plan's* goals to mitigate traffic and promote ease of travel by all modes. These new streets should be viewed as mandatory when land is being developed adjacent to or inclusive of the new street's proposed location. However, the dashed lines should also be considered approximate alignments subject to site-specific obstacles, street design practices, adjacent land uses, and other real-world conditions.

The Thoroughfare Plan Map includes two additional street classifications; Interstate and U.S./State Highway. These classifications are not described in the preceding pages due to the City of Carmel not having jurisdiction over those transportation facilities.

See the Bike and Pedestrian Facilities Plan for non-vehicular facility descriptions.

| Street Classification  | Minimum Right-of-Way | Maximum Number of Lanes | Minimum Lane Widths | Medians          | On-Street Parking (Minimum Width) | Minimum Tree Lawn/Bed | Street Trees |
|--|----------------------|-------------------------|---------------------|------------------|-----------------------------------|-----------------------|--------------|
| Primary Arterial Street  | 120 feet             | 4                       | 11.5 feet           | Not Required     | Not permitted                     | 8'                    | Required     |
| Primary Parkway Street   | 170 feet             | 4 to 6                  | 12 feet             | Required, 15 ft. | Not permitted                     | N/A                   | N/A          |
| Urban Arterial Street  | 98 feet*             | 4                       | 11.5 feet           | Not Required     | Optional on one or two sides (8') | 6' Tree Beds          | Required     |
| Arterial Street  | 100 feet             | 4                       | 11.5 feet           | Not Required     | Not permitted                     | 8'                    | Required     |
| Parkway Arterial Street  | 120 feet             | 4                       | 11 feet             | Required, 14 ft. | Not permitted                     | 6'                    | Required     |
| Urban Collector Street   | 76 feet              | 2                       | 11 feet             | Not Required     | Optional on one or two sides (8') | 6' Tree Beds          | Required     |
| Collector Street**   | 90 feet              | 2                       | 11 feet             | Not Required     | Optional on one or two sides (7') | 6'                    | Required     |
| Parkway Collector Street   | 90 feet              | 2                       | 16 feet             | Required, 12 ft. | Not permitted                     | 6'                    | Required     |
| Local Street   | 56 feet              | 2                       | 10.5 feet           | Not Required     | Optional on one or two sides (7') | 6'                    | Required     |
| * Plus 8' per parking lane   |                      |                         |                     |                  |                                   |                       |              |
| ** 80 feet in areas south of 116th Street and west of Spring Mill Road |                      |                         |                     |                  |                                   |                       |              |

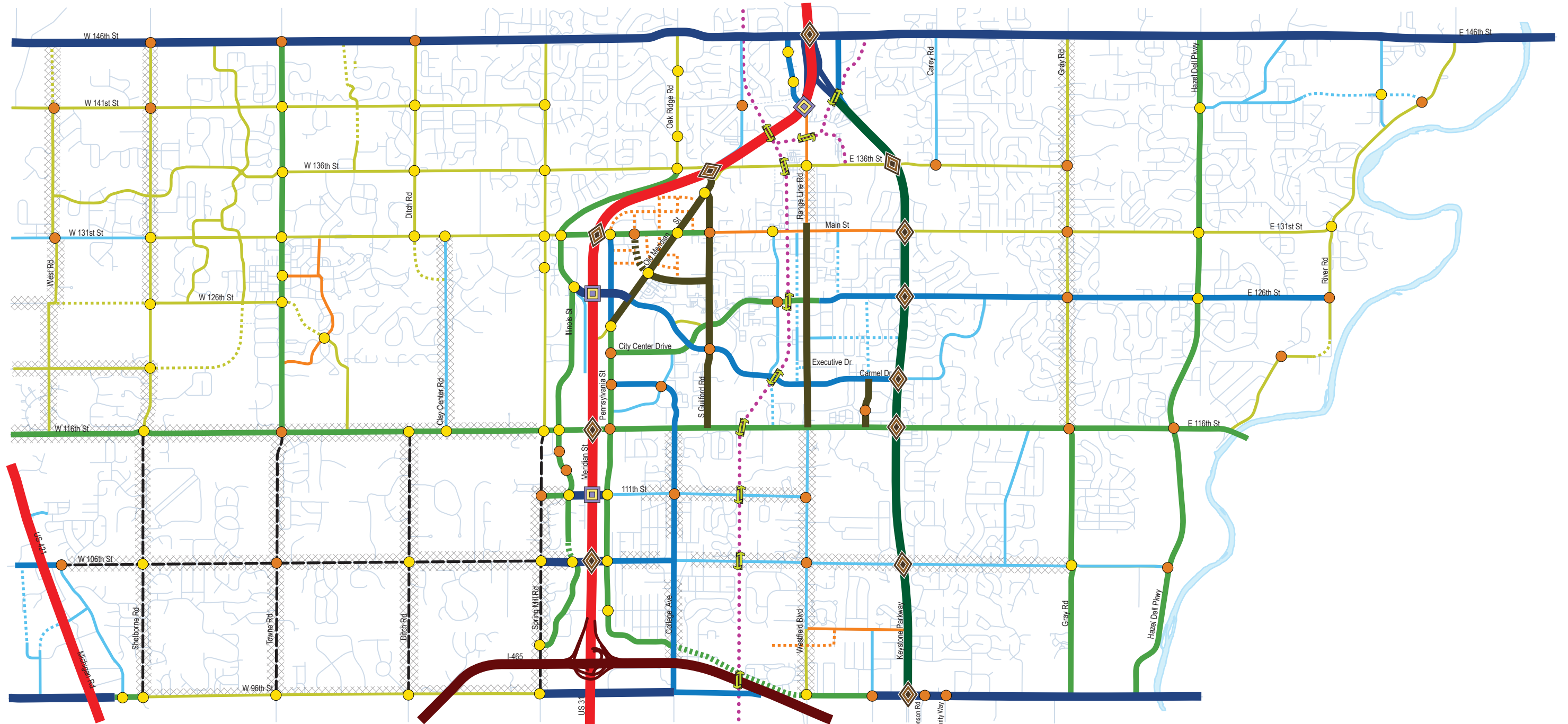
-A special minimum right-of-way, 80 feet, applies to areas south of 116th Street and west of Spring Mill Road.

-Parkways are streets with medians.





## PART 4: TRANSPORTATION PLAN



## MAP LEGEND

|  |  |  |   |  |   |  |                                    |
|--|--|--|---|--|---|--|------------------------------------|
|  | Interstate                               |  | Parkway Arterial Street (120' ROW)          |  | Local Street (56' ROW)                        |  | Off-Street Commuter Trail          |
|  | U.S./State Highway                       |  | Proposed Parkway Arterial Street (120' ROW) |  | Proposed Local Street (56' ROW)               |  | Grade-Separated Crossing           |
|  | Primary Arterial Street (120' ROW)       |  | Urban Collector Street (76' ROW)            |  | Collector Street per NOAX Agreement (80' ROW) |  | Interchange Location               |
|  | Primary Parkway Street (170' ROW)        |  | Proposed Urban Collector Street (76' ROW)   |  | Conservation Corridors                        |  | Overpass Location                  |
|  | Urban Arterial Street (98' ROW)          |  | Collector Street (90' ROW)                  |  | Roundabout Intersection (Existing)            |  | Roundabout Intersection (Proposed) |
|  | Proposed Urban Arterial Street (98' ROW) |  | Proposed Collector Street (90' ROW)         |  | River   |  |                                    |
|  | Arterial Street (100' ROW)               |  | Parkway Collector Street (90' ROW)          |  |   |  |                                    |
|  | Proposed Arterial Street (100' ROW)      |  | Proposed Parkway Collector Street (90' ROW) |  |   |  |                                    |

## THOROUGHFARE PLAN MAP



Map Prepared by Ground Rules, Inc.

Last Revised 11-02-2015

## BICYCLE AND PEDESTRIAN FACILITY PLAN

The City's Bicycle and Pedestrian Facility Plan focuses on facilities for non-motorized transportation. These facilities provide a means for people to get where they are going without using their vehicles (i.e. for commuting). As a result, bicycle and pedestrian facilities help mitigate traffic throughout the City while improving the health of residents. Another primary purpose for bicycle and pedestrian facilities is to provide a means for people who cannot drive vehicles (e.g. youth, blind, and seniors) to safely get to local destinations. For this reason, all bicycle and pedestrian facilities are intended to accommodate all handicap accessible devices.

The secondary purpose for bicycle and pedestrian facilities is fitness training and general recreation. People desirous of a healthy life-style need facilities to safely walk, run, skate/blade, or cycle. The City of Carmel realizes not all bicycle and pedestrian facilities are designed for all types of fitness activities (e.g. fitness cycling is not appropriate on sidewalks). Therefore, multiple bicycle and pedestrian facilities may be necessary in the same right-of-way to accommodate different fitness activities.

### Bicycle/Pedestrian Facility Classifications and Descriptions

The following bicycle and pedestrian facility classifications are used on the Bicycle and Pedestrian Facility Plan Map:

|                                    |       |
|------------------------------------|-------|
| 1. Residential Sidewalk.....       | pg 64 |
| 2. Urban Residential Sidewalk..... | pg 65 |
| 3. Urban Commercial Sidewalk.....  | pg 66 |
| 4. Multi-use Path.....             | pg 67 |
| 5. On-Street Bicycle Lane .....    | pg 68 |
| 6. Off-Street Urban Trail.....     | pg 69 |
| 7. Off-Street Trail.....           | pg 70 |

Each of the bicycle and pedestrian facility classifications listed above has a page dedicated to describing how it can be used to convey bicycle and pedestrian traffic and how it fits into the fabric of the City. Further, the following headings are used, as described below, to convey the essence of each bicycle and pedestrian facility classification:

**General Description:** This section gives the reader a brief description of why the bicycle and pedestrian facility classification has been established.

**Bicycle and Pedestrian Facility Features:** This section conveys the primary design standards that make each bicycle and pedestrian facility classification unique. The standards include: right-of-way, minimum facility width, construction material, joints, obstructions, and street separation.

**Image Example:** This section references images of each bicycle and pedestrian facility classification. The images are intended to portray some of the best examples available in Carmel, but might not represent the purest intent of the facility. When applied in the real world, variations in the design may also be necessary.

**Design Priorities:** During the design phase of all bicycle and pedestrian facility improvement projects, decisions have to be made to best meet budgetary constraints, timelines, funding cycles, physical constraints, and public opinions. This section communicates the primary and secondary priorities for each bicycle and pedestrian facility classification. Primary priorities are those that should not be foregone in design decisions. Secondary priorities are those that maybe considered for compromise, non-inclusion, or later phases.

**Safety Enhancements:** This section describes bicycle and pedestrian safety options to consider when installing or improving a facility. The enhancements listed are intended to identify the most appropriate for the subject facility.

**Effect of Annexation Agreement:** Along Spring Mill Road, Ditch Road, Shelborne Road, Town Road (between 116th and 96th Streets), and 106th Street (between Commerce Drive and Spring Mill Road), Carmel intends to install Multi-use Paths on both sides of Collector Streets. The timing and final design of Multi-use Paths will depend on topography, availability of right-of-way, and environmental constraints. No other information in the *C3 Plan* shall be construed as superseding this section.

## RESIDENTIAL SIDEWALK

### General Description

A Residential Sidewalk is designed to accommodate the following type of pedestrian activities in suburban neighborhoods:

- walking
- pushing strollers
- children's recreation

Generally, Residential Sidewalks provide connectivity from home to home and linkages to bicycle and pedestrian facilities along perimeter roads (e.g. Multi-use Paths).

### Facility Features

- **Right-of-Way:** Fully within a public right-of-way
- **Minimum Facility Width:** 5 feet
- **Construction Material:** Concrete
- **Joints:** Saw-cut preferred, tooled is permitted
- **Obstructions:** None allowed
- **Street Separation:** 6-foot tree lawn is required

### Image Example

See images in right column.

### Design Priorities

- **Primary Priorities:**
  - Reinforcing neighborhood character
  - ADA compliance at intersections
  - Unobstructed
- **Secondary Priorities:**
  - Avoid steep slopes
  - Avoid unnecessary curvature of alignment

### Safety Enhancements

- Striped crosswalks
- Change in pavement material at corners
- Saw-cut joints
- Tree canopy trimmed to give at least 8 feet of clearance
- Lighting



*Sidewalks along Melark Drive in The Enclave of Carmel provide pedestrian access to neighboring Concord Village.*



*Care should be taken to avoid or remove obstructions to provide a safe pedestrian way.*



*Birchwood Court illustrates a proper relationship of street, planting strip, and sidewalk.*



## URBAN RESIDENTIAL SIDEWALK

### General Description

An Urban Residential Sidewalk is designed to accommodate the following type of pedestrian activities in urban neighborhoods:

- walking
- pushing strollers
- children's recreation

Generally, Urban Residential Sidewalks provide connectivity from home to home and linkages to bicycle and pedestrian facilities along perimeter roads (e.g. Multi-use Paths) or Urban Commercial Sidewalks.

Because separation from the street is preferred, this type of facility is not encouraged in new subdivisions or developments.

### Facility Features

- **Right-of-Way:** Fully within a public right-of-way
- **Minimum Facility Width:** 6 feet
- **Construction Material:** Concrete, brick, or hardscape pavers
- **Joints:** Not applicable, but saw-cut is preferred for concrete sidewalks
- **Obstructions:** Street lights, street signs, and trees may be located in the sidewalk as long as 5 feet of clear-way is maintained in all sections
- **Street Separation:** Not required

### Image Example

See images in right column.

### Design Priorities

- **Primary Priorities:**
  - Reinforcing neighborhood character
  - ADA compliance at intersections
  - Street trees
- **Secondary Priorities:**
  - Unobstructed
  - Avoid steep slopes
  - Avoid unnecessary curvature of alignment

### Safety Enhancements

- Striped crosswalks
- Change in pavement material at corners
- Saw-cut joints
- Tree canopy trimmed to give at least 8 feet of clearance
- Lighting



*Urban Residential Sidewalks are particularly suited to historic neighborhoods.*



*The Urban Residential Sidewalk on First Street NW in Old Town provides pedestrian access to Range Line Road.*



*High density developments like Brookshire Village make use of Urban Residential Sidewalks.*



## URBAN COMMERCIAL SIDEWALK

### General Description

An Urban Commercial Sidewalk is designed to accommodate the following type of pedestrian activities in urban settings:

- walking
- sitting on benches
- outdoor dining
- pushing strollers

Generally, Urban Commercial Sidewalks provide connectivity from business to business and linkages to other pedestrian facilities along perimeter roads (e.g. Multi-use Paths) or Urban Residential Sidewalks.

### Facility Features

- **Right-of-Way:** Fully within a public right-of-way
- **Minimum Facility Width:** 12 feet; 8 feet when integrated into pre-developed areas
- **Construction Material:** Concrete, brick or hardscape pavers
- **Joints:** Not applicable, but saw-cut is preferred for concrete sidewalks
- **Obstructions:** Street lights, street signs, planters, trees, public art, and seating may be located on the sidewalk as long as 6 feet of clear-way is maintained in all sections
- **Street Separation:** Not required

### Image Example

See images in right column.

### Design Priorities

- **Primary Priorities:**
  - Reinforcing commercial character
  - ADA compliance at intersections
  - Variation in construction materials
  - Street trees
- **Secondary Priorities:**
  - Unobstructed
  - Avoid steep slopes

### Safety Enhancements

- Striped crosswalks
- Change in pavement material at corners
- Saw-cut joints
- Tree canopy trimmed to give at least 8 feet of clearance
- Lighting
- Tabled (raised) crosswalks



*Redevelopment along West Main Street incorporates Urban Commercial Sidewalks.*



*The Urban Commercial Sidewalks in Clay Terrace are an integral part of the life-style center's design concept.*

## MULTI-USE PATH

### General Description

A Multi-use Path is designed to accommodate the following type of bicycle and pedestrian activities along collector, parkway and arterial streets:

- walking
- jogging
- pushing strollers
- children's recreation
- skating/blading
- slow to moderate speed cycling
- commuting

Generally, Multi-use Paths provide connectivity from neighborhood to neighborhood and linkages to community amenities (e.g. Parks and Neighborhood Service Nodes).

### Facility Features

- **Right-of-Way:** Fully within a public right-of-way
- **Minimum Facility Width:** 10 feet; 6 feet when integrating into pre-developed neighborhoods or urban environments
- **Construction Material:** Asphalt or saw-cut concrete
- **Joints:** Not applicable for asphalt, but concrete must have saw-cut joints
- **Obstructions:** None allowed
- **Street Separation:** Minimum of 8 feet; 5 feet when integrating into pre-developed neighborhoods or urban environments

### Image Example

See images in right column.

### Design Priorities

- **Primary Priorities:**
  - Unobstructed
  - Use slight curves to avoid obstructions
  - Positive drainage away from Multi-use Path
  - Placement on both sides of the street
  - ADA compliance at intersections
- **Secondary Priorities:**
  - Reinforcing local character
  - Avoid steep slopes

### Safety Enhancements

- Striped crossings at streets and major curb cut intersections
- Signs for bicycles, pedestrians, and automobiles at intersections
- Smooth transitions from Off-Street Trail to street surface at intersections
- Bollards or chicane gates at bicycle or pedestrian approaches to major streets or mid-block crossings.
- Lighting



*Recent upgrades to 106th Street in Home Place include a Multi-use Path link to the Monon Greenway.*



*Multi-use Paths were installed when Oak Ridge Road was transformed to a Parkway Collector Street.*

## ON-STREET BICYCLE LANE

### General Description

An On-Street Bicycle Lane is designed to accommodate the following bicycle activities along existing roadways:

- commuting
- fitness cycling
- recreation cycling

Generally, On-Street Bicycle Lanes are intended to provide a safer facility for fast-moving bicycle traffic.

### Facility Features

- **Right-of-Way:** Fully within a public right-of-way
- **Minimum Facility Width:** 6 feet
- **Construction Material:** Asphalt
- **Joints:** Not applicable
- **Obstructions:** None allowed
- **Street Separation:** By painted strip

### Image Example

See images in right column.

### Design Priorities

- **Primary Priorities:**
  - Lane definition
  - Information and traffic signs
  - Unobstructed
  - Placement on both sides of street
  - Positive drainage away from On-Street Bicycle Lane
- **Secondary Priorities:**
  - Lighting
  - Avoid steep slopes
  - Avoid unnecessary curvature of alignment

### Safety Enhancements

- Striped lanes (not raised markings) at street intersections
- Smooth transitions from asphalt to curb
- Street sweep sand, stones, and debris from bicycle lanes
- Lighting
- Storm water inlet orientation and product selection
- Separation between parallel parking and bicycle lanes
- Bicycle signals
- Bicycle boxes at intersections to allow bicyclists to navigate the intersection more safely and ahead of automobile movements.



*East 116th Street east of Keystone Parkway was among the first streets in Carmel to have a designated bike lane.*



*On-Street Bicycle Lanes help ensure cyclist safety by defining limits for motorists.*

## OFF-STREET URBAN TRAIL

### General Description

An Off-Street Urban Trail is designed to accommodate the following bicycle and pedestrian activities along highly traveled areas near City Center and Old Town:

- walking
- jogging
- commuting
- pushing strollers
- children's recreation
- skating/blading
- slow to moderate speed cycling

Generally, Off-Street Urban Trails provide recreational, fitness, and commuting opportunities in both urban and natural settings.

### Facility Features

- **Right-of-Way:** May be in a right-of-way, easement, or public park; 66 feet in width
- **Minimum Facility Width:** 24 feet
- **Construction Material:** Asphalt, saw-cut concrete, or other suitable surface
- **Joints:** Any concrete must have saw-cut joints
- **Obstructions:** None allowed
- **Street Separation:** Not applicable

### Image Example

See images in right column.

### Design Priorities

- **Primary Priorities:**
  - Unobstructed
  - Separate bicycle and pedestrian lanes
  - Minimize disturbance to sensitive natural features
  - Landscaping
  - Wayfinding signs
  - Bicycle parking areas

### Secondary Priorities:

- User comforts such as plazas, benches, water fountains, and public art
- ADA compliance at intersections
- Avoid steep slopes

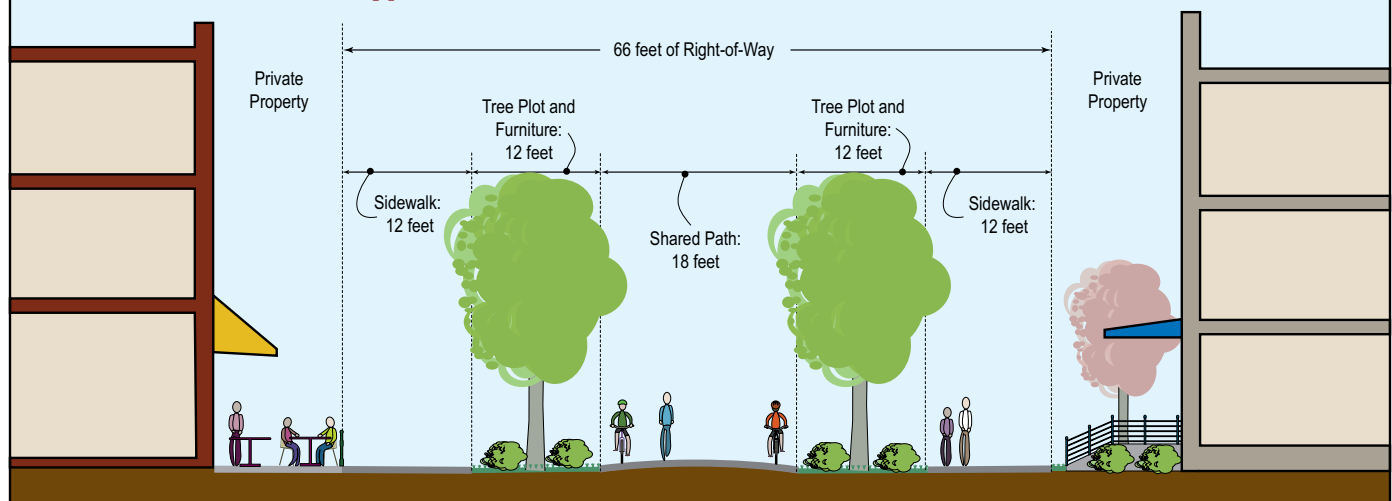
### Safety Enhancements

- Striped crossings at street intersections
- Raised crossings at intersections
- Separated grade crossings
- Signs for trail users and automobiles at intersections
- Smooth transitions from Off-Street Urban Trail to street surface at intersections
- Bollards or chicane gates at trail approaches to major streets or mid-block crossings
- Lighting at intersections



*The Monon Greenway passes through Old Town, providing pedestrians and cyclists access to this increasingly popular destination.*

### Off-street Urban Trail Typical Cross Section





## OFF-STREET TRAIL

### General Description

An Off-Street Trail is designed to accommodate the following type of bicycle and pedestrian activities along natural or off-street corridors:

- walking
- jogging
- commuting
- pushing strollers
- children's recreation
- skating/blading
- slow to moderate speed cycling

Generally, Off-Street Trails provide recreation and fitness opportunities as well as a thoroughfare in natural settings.

### Facility Features

- **Right-of-Way:** Not in a street right-of-way, but within an easement, floodplain, or public park; 66 feet in width
- **Minimum Facility Width:** 16 feet total with a 12 foot wide trail and 2 foot shoulder
- **Construction Material:** Asphalt, crushed limestone, or other suitable surface
- **Joints:** Not applicable
- **Obstructions:** None allowed
- **Street Separation:** Not applicable

### Image Example

See images in right column.

### Design Priorities

- **Primary Priorities:**
  - Unobstructed
  - Minimize disturbance to sensitive natural features
  - Reflect natural character
  - Use curves to avoid obstructions
  - Positive drainage away from Off-Street Trail
  - Bicycle parking areas
- **Secondary Priorities:**
  - ADA compliance at intersections
  - Avoid steep slopes

### Safety Enhancements

- Striped crossings at street intersections
- Signs for bicycles, pedestrians, and automobiles at intersections
- Smooth transitions from Off-Street Trail to street surface at intersections
- Bollards or chicane gates at pedestrian approaches to major streets or mid-block crossings
- Grade-separated crossings
- Lighting at intersections



*The Monon Greenway provides access and continuity between Carmel's and Indianapolis' trail systems.*



*Off-Street Trails have been provided in several parks, like the one in West Park.*



## BICYCLE AND PEDESTRIAN FACILITY CLASSIFICATION COMPARISON

The below table provides a quick reference for comparing the different bicycle and pedestrian classifications. The information in the below table mirrors the content in each of the bicycle and pedestrian facility classification descriptions on the previous pages.

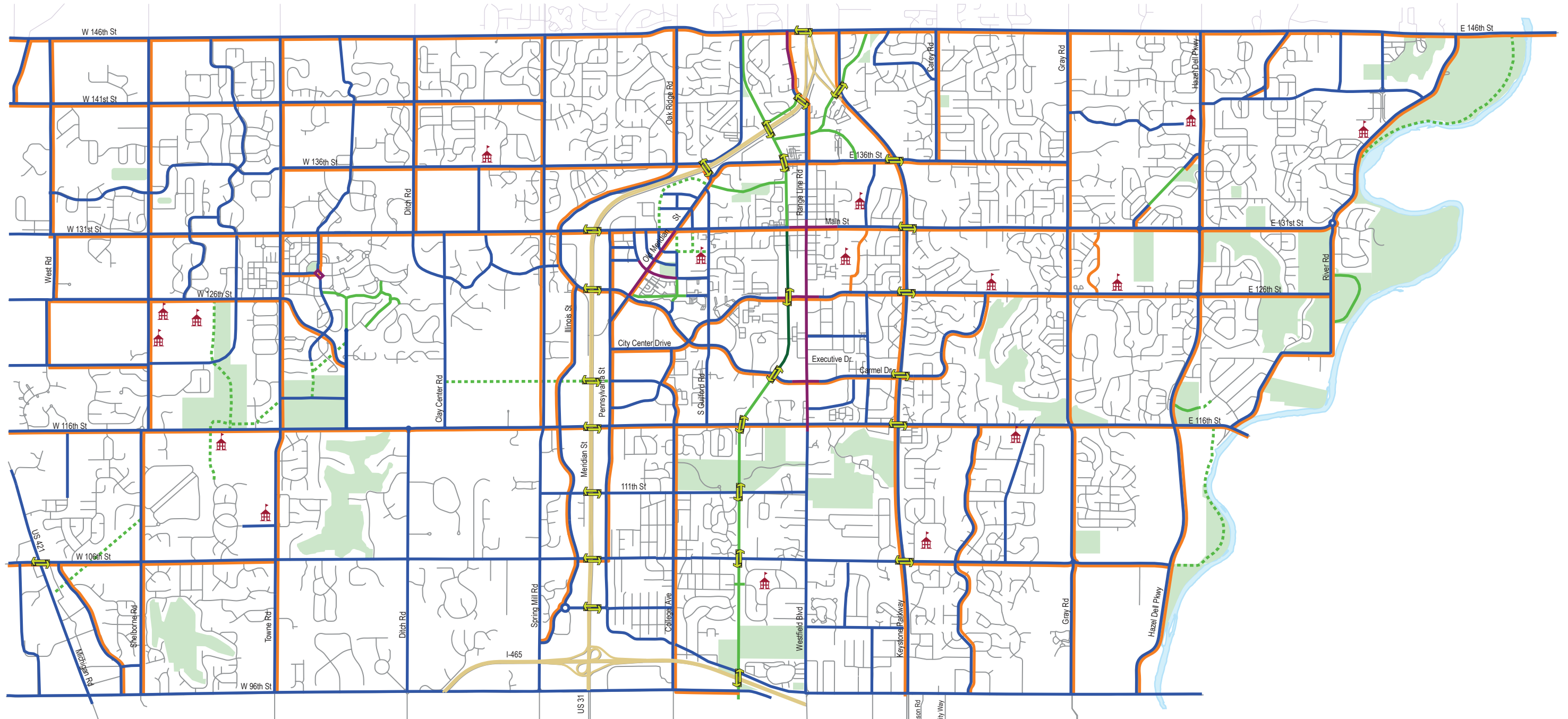
| Bicycle and Pedestrian Facility Classification | Right-of-Way   | Minimum Facility Width                   | Construction Material                                 | Joints                                 | Obstructions  | Street Separation                     |
|--|--|--|---|--|---|---------------------------------------|
| <b>Residential Sidewalk</b>                    | Fully within a public right-of-way   | 5'                                       | Concrete  | Saw-cut preferred, tooled permitted    | None allowed  | 6' tree lawn required                 |
| <b>Urban Residential Sidewalk</b>              | Fully within a public right-of-way   | 6'                                       | Concrete, brick or hardscape pavers                   | N/A but saw-cut preferred for concrete | Street lights, street signs and trees may be located in the sidewalk as long as 5' of clear-way is maintained | Not required                          |
| <b>Urban Commercial Sidewalk</b>               | Fully within a public right-of-way   | 12'; 8' in pre-developed areas           | Concrete, brick or hardscape pavers                   | N/A but saw-cut preferred for concrete | Street lights, street signs and trees may be located in the sidewalk as long as 6' of clear-way is maintained | Not required                          |
| <b>Multi-use Path</b>                          | Fully within a public right-of-way   | 10'; 6' in pre-developed areas           | Asphalt or saw-cut concrete                           | N/A but concrete must be saw-cut       | None allowed  | Minimum 8'; 5' in pre-developed areas |
| <b>On-Street Bicycle Lane</b>                  | Fully within a public right-of-way   | 6'                                       | Asphalt   | N/A                                    | None allowed  | By painted strip                      |
| <b>Off-Street Urban Trail</b>                  | Right-of-way, easement, or public park   | 24'                                      | Asphalt, saw-cut concrete, or other suitable surface  | Concrete must be saw-cut               | None allowed  | N/A                                   |
| <b>Off-Street Trail</b>                        | Not in a street right-of-way, but within an easement, floodplain, or public park | 16' total with 12' trail and 2' shoulder | Asphalt, crushed limestone, or other suitable surface | N/A                                    | None allowed  | N/A                                   |

**BICYCLE AND PEDESTRIAN PLAN MAP**

The Bicycle and Pedestrian Plan Map (on page 75) applies the bicycle and pedestrian facility classifications throughout Carmel's planning jurisdiction. The bicycle and pedestrian facility classifications represent the future system, not what exists today.

The Bicycle and Pedestrian Plan Map is used to denote where new bicycle and pedestrian facilities are necessary to fulfill the *C3 Plan's* goals to mitigate traffic and promote ease of travel by all modes. These bicycle and pedestrian facilities should be viewed as mandatory when land is being developed adjacent to or inclusive of the new facility's proposed location.

See the Thoroughfare Plan for vehicular facility descriptions.



## MAP LEGEND

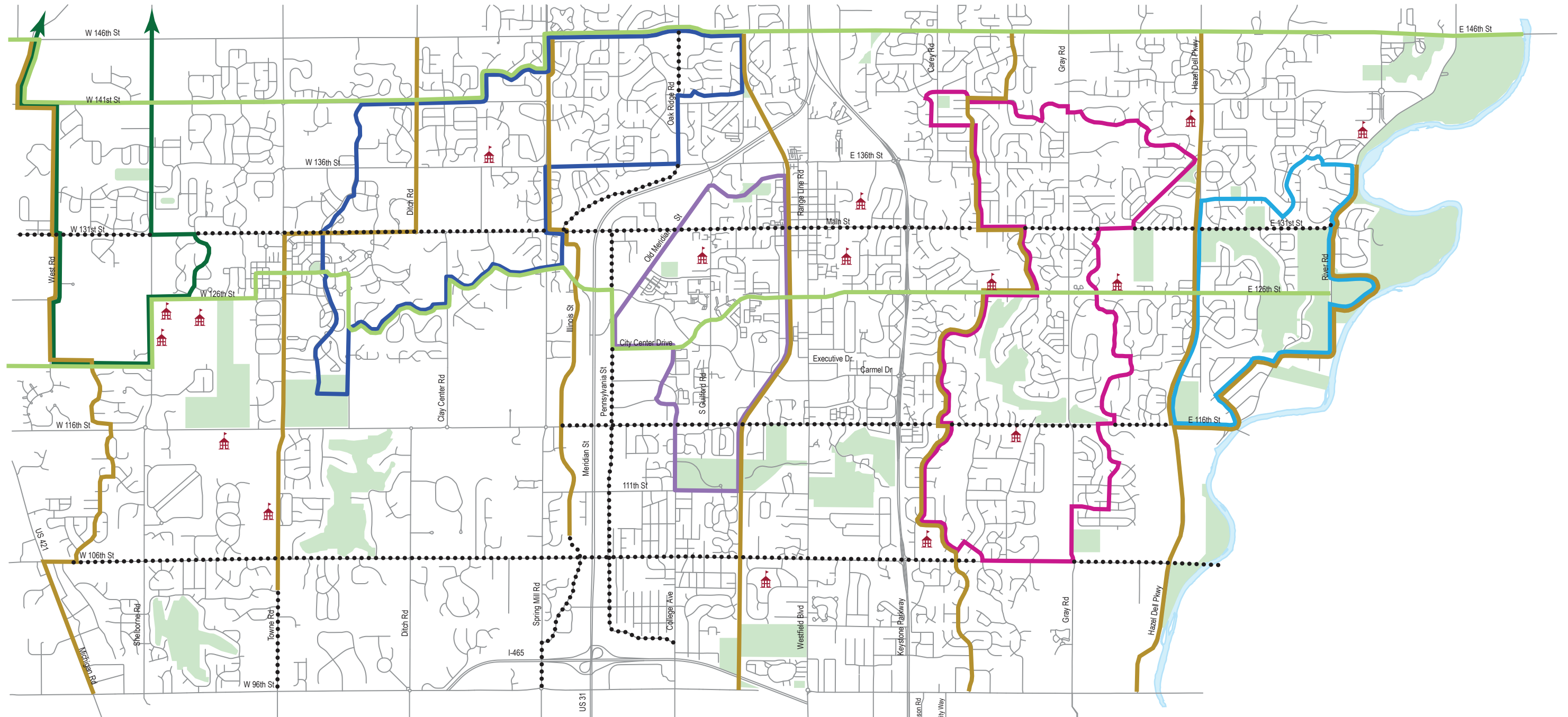
- |  |  |  |   |
|--|--|--|---|
|  | Off-street Urban Trail                             |  | Major Corridor without Bicycle or Pedestrian Facility |
|  | Existing Off-street Trail                          |  | Grade-separated Crossing                              |
|  | Proposed Off-street Trail                          |  | School Location                                       |
|  | Bicycle Lane                                       |  | Park Location   |
|  | Multi-use Path                                     |  | River   |
|  | Urban Commercial Sidewalk                          |  |   |
|  | Residential Sidewalk or Urban Residential Sidewalk |  |   |

## BICYCLE AND PEDESTRIAN PLAN MAP



Map Prepared by Ground Rules, Inc.

Last Revised 11-02-2015



## MAP LEGEND

- |  |                    |  |              |
|--|--------------------|--|--------------|
|  | West Loop          |  | Future Route |
|  | Village Loop       |  | School       |
|  | City Center Loop   |  | Park         |
|  | Cool Creek Loop    |  | White River  |
|  | White River Loop   |  |              |
|  | East/West Routes   |  |              |
|  | North/South Routes |  |              |

## BICYCLE ROUTES AND LOOPS MAP



Map Prepared by Ground Rules, Inc.

Last Revised 10-06-2014



## TRANSIT PLAN

The City is actively in pursuit of a means to convey commuters between key locations in Carmel, Hamilton County, and Indianapolis. The City also has interest in an intra-city system to allow people to travel between key destinations in the City without using their own automobile. The primary purpose of these interests is to mitigate traffic on arterial streets and highways. The accomplishment of a regional commuter line and intra-city system would also help nurture the integrity of the natural environment by reducing emissions and consumption of petroleum products.

It is suggested that a commuter line can not only mitigate traffic congestion, but can reduce commute times to downtown. Collectively, these benefits are expected to make a commuter line an attractive option for those who work in downtown Indianapolis but live in Carmel or vice versa.

A secondary purpose for a commuter line and intra-city system is to provide accessibility to disabled persons, youth, seniors, and others who cannot, or do not wish to, drive.

Many factors contribute to the viability of any transit system. For instance, the cost of gasoline influences potential ridership, thus the revenue stream. Other factors include:

- gross residential population of the communities being served,
- density of population near transit station,
- number of workers and residents within a 5 minute walk of a transit station,
- design of the system (e.g. raised or at-grade),
- cost per ride,
- percent of system being subsidized by the government,
- convenience of system (e.g. transit stations near desired destination),
- frequency of transit vehicles (i.e. wait time for boarding),
- actual and perceived degree of safety and security,
- time riding transit verses driving car, and
- availability of parking areas.

This section of the *C3 Plan* is intended to explore transit opportunities to meet the needs of a developing and redeveloping community. It is not intended to encourage high density for the sake of establishing a transit system.

### Transit Facility Classifications and Descriptions

The following transit classifications are used on the Transit Plan Map:

|   |       |
|---|-------|
| 1. <i>Commuter Line</i> .....             | pg 76 |
| 2. <i>Intra-city Transportation</i> ..... | pg 77 |

Each of the transit facility classifications listed above has a page dedicated to describing how it can be used to mitigate traffic and how it fits into the fabric of the City. Further, the following headings are used, as described below, to convey the essence of each transit facility classification:

**General Description:** This section gives the reader a brief description of why the transit classification has been established.

**Design Priorities:** This section conveys the primary design standards that should apply to each type of transit to make it successful.

## COMMUTER LINE

### General Description

A Commuter Line would be designed to carry a large number of people from key locations in Carmel to one or more destinations in downtown Indianapolis. Additional stops en route to downtown Indianapolis may also be necessary.

The interim express bus system should continue to be supported and enhanced to mitigate traffic and provide familiarity with commuter systems.

Currently the type of commuter line (e.g. raised monorail or light rail) has not been conceptualized, nor has any engineering or comprehensive study been completed to choose a route into Carmel. Extensive study should be conducted to determine an exact route, station locations, scheduling, ridership, cost, phasing, ties to other transportation systems, and type of “vehicle” to use. For that reason this section is primarily a placeholder for revisions and additions as further study is conducted. Everything contained in this section should be considered conceptual and preliminary.

### Design Priorities

- Commuter stops should take the form of stations with shelters, waiting areas, and bicycle parking.
- Stations in Carmel should be located in areas with intense employment and large parking capacity, or dense populations living within walking distance.
- Destinations for commuters to include Keystone at the Crossing and downtown Indianapolis.
- “Express” commute time to downtown Indianapolis.
- “Vehicles” should provide the space for passengers to transport their bicycles.



*MetroLink in St. Louis is an example of light rail. The electric powered system uses overhead power lines for energy.*



*The Clarian People Mover was installed in Indianapolis to better link hospital campuses to one another. This system represents an automated and raised rail system.*



*The Indianapolis Metropolitan Planning Office uses the above image to describe an at-grade automated rail system. The location of the system is unknown.*

## INTRA-CITY TRANSPORTATION SYSTEM

### General Description

A Intra-city Transportation System would be designed to carry a moderate number of people between key locations in Carmel. Additional routes may include key locations in Zionsville, Noblesville, Indianapolis, Westfield, and/or Fishers. Most likely, this system would be a driver-operated, on-street system.

Currently the type of Intra-city Transportation System (e.g. trolley or bus) has not been conceptualized, nor has any comprehensive study been conducted to determine an on-street system of routes and stops. Extensive study should be conducted to determine potential routes, stops, scheduling, ridership, cost, phasing, ties to other transportation systems, and type of vehicles. For that reason this section is primarily a placeholder for revisions and additions as further study is conducted. Everything contained in this section should be considered conceptual and preliminary.

### Design Priorities

- Intra-city stops should take the form of “turnouts” to provide safe ingress and egress from the vehicle.
- Turnouts in Carmel should be located at popular destinations like Old Town, City Center, Clay Terrace, U.S. 31 office parks, Merchants’ Square, Central Park, and strategic locations near higher density residential developments.
- Convenience of schedule and efficiency in time.
- User-friendly and predictable.
- Driver operated.



*The New Flyer brand hybrid electric bus represents the latest technology in low floor (for easy in and out) and low emission transit vehicles. Buses like this could match Carmel’s commitment to a fleet of fuel efficient and low emissions vehicles.*



*Some communities desire themed buses so riders can quickly recognize them and to fit better into the context. This trolley bus is used in Central Park in New York City.*



*Compact buses, like this one used in Long Beach, California, provide lower up-front cost and are more maneuverable in urban environments.*

## TRANSIT FACILITY PLAN

A Transit Facility Plan should be prepared to identify potential routes using key corridors. The Transit Facility plan would also identify high density or intense nodes that would benefit from a transit stop. Once prepared the Transit Facility Plan can help promote proper development where transit stops will most likely be located, and to discourage incompatible land uses from locating adjacent to routes or near transit stops.

The Transit Facility Plan Map, when prepared, should be located on the following page.